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| 09/960,401      | 09/24/2001  | Hisatomo Yonehara    | 011275              | 5630             |

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| EXAMINER |
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MARKHAM, WESLEY D

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| ART UNIT | PAPER NUMBER |
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1762

DATE MAILED: 08/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/960,401

Applicant(s)

YONEHARA, HISATOMO

Examiner

Wesley D Markham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 12/21/01. 6) ☐ Other: .

### **DETAILED ACTION**

Claims 1 – 8 are currently pending in U.S. Application Serial No. 09/960,401, and an Office Action on the merits follows.

#### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d) (i.e., the certified copy of Japanese priority document JP 2000-294108, filed on 9/27/2000), which papers have been placed of record in the file.

#### ***Information Disclosure Statement***

2. Acknowledgement is made of the IDS submitted by the applicant on 12/21/2001.  
The references listed thereon have been considered by the examiner as indicated on the initialed, attached copy of the PTO-1449 form.

#### ***Drawings***

3. No drawings have been filed in the instant application.

#### ***Specification***

4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

5. The disclosure is objected to because of the following informalities:

- Page 3, line 4: The phrase, "...because the coloring material is consist of a dye" appears to contain a typographical error. It appears as though the phrase should read, "...because the coloring material consists of a dye".
- The use of the trademarks DISPERBYK 130, DISPERBYK 161, DISPERBYK 162, DISPERBYK 163, DISPERBYK 170, EFKA 46, EFKA 47, SOLSPERSE 32550, SOLSPERSE 24000, ANJISPER PB811, ANJISPER PB814, IRGACURE #369, and SUPER BECKAMINE, has been noted in this application (see pages 12, 13, 29, and 37 – 40 of the specification of the instant application). The trademarks should be capitalized wherever they appear and be accompanied by the generic terminology. Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. Claims 1, 2, and 4 – 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marumoto et al. (USPN 6,277,529 B1) in view of Obayashi et al. (USPN 6,048,924).
8. Regarding independent Claim 1 (from which Claims 2 – 8 depend), Marumoto et al. teaches a method of producing a color filter (Abstract), which comprises forming pixels on a transparent substrate (Col.1, lines 9 – 13 and 20 – 41, and Col.4, lines 16 – 21) using a colored composition containing (a) a resin that can be hardened when an energy such as heat, light, or both, is applied thereto, and (b) a coloring material, by an ink-jet printing method, followed by curing the pixels (Figures 5A – 5D, Col.7, lines 3 – 67, and Col.8, lines 1 – 2). Marumoto et al. does not explicitly teach that the resin is an amino resin having a carboxyl group and/or a phenolic hydroxyl group. However, the resin of Marumoto et al. does not appear to be particularly limited, and various examples of resins taught by Marumoto et al. include acrylic resins, melamine resins, a polymer containing hydroxyl groups or carboxyl groups and melamine, etc. (Col.7, lines 36 – 47). The solvent added to the ink (i.e., the mixture of the resin and the coloring material) is preferably water-based in order to obtain a high ink-jetting performance (Col.7, lines 48 – 51). Obayashi et al. teaches an aqueous resin composition that comprises an amino resin having a carboxyl group and/or a phenolic hydroxyl group (Abstract, Col.1, lines 6 – 17 and 62 – 67, Col.2, Col.3, lines 14 – 67, and Col.4, lines 1 – 49). The resin also includes components such as melamine and water-borne acrylic resins (i.e., resins taught by Marumoto et al. to be suitable in an ink-jet process for forming a color filter) (Col.3,

lines 38 – 60, and Col.6, lines 37 – 39). The resin of Obayashi et al. can be combined with colorants such as pigments in order to function as an ink (Col.1, line 15, Col.13, lines 49 – 54, and Col.14, lines 3 – 4) and can provide an excellent cured film by baking (Col.14, lines 5 – 7). The resin of Obayashi et al. has the following advantages: (1) since it is water based, the amount of organic solvent utilized and contained in the coating is reduced, (2) it has excellent curability, (3) it has excellent water resistance and heat resistance, and (4) it has a hardness equivalent to the hardness of solvent-borne amino resins (Abstract). Therefore, it would have been obvious to one of ordinary skill in the art to utilize the carboxyl group-containing amino resin of Obayashi et al. as the resin in the ink-jet printing / color filter manufacturing method of Marumoto et al. with the reasonable expectation of (1) success, as Marumoto et al. teaches that water-based resins having components similar to components in the resin of Obayashi et al. can be utilized in the ink-jet printing / color filter manufacturing process, and the resin of Obayashi et al. can be combined with colorants in order to function as an ink, and (2) obtaining the benefits of using the amino resin of Obayashi et al. in the process of Marumoto et al., such as reducing the amount of organic solvent utilized, thereby reducing the manufacturing and waste-disposal costs of the process, and forming color filter pixels that have excellent curability, excellent water and heat resistance, and a high hardness due to the properties of the amino resin of Obayashi et al.

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9. The combination of Marumoto et al. and Obayashi et al. also teaches all the limitations of Claims 2 and 4 – 6 as set forth above in paragraph 8 and below, including a method wherein / further comprising:

- Claim 5: The colored composition further contains a compound having a photopolymerizable functional group. Specifically, in addition to the carboxyl group-containing amino resin, the water-borne resin composition of Obayashi et al. also contains polymerizable / crosslinkable compounds such as 2-hydroxyethyl (meth)acrylate (2-HEMA) and/or various other acrylate and methacrylate compounds (Col.8, lines 23 – 32, and Col.9, lines 7 – 25). These compounds taught by Obayashi et al. have a photopolymerizable functional group (see, for example, page 15, line 6, of the applicant's specification, Hirayama et al. (USPN 5,821,277) (Col.13, lines 31 – 36 and 61 – 65), and/or Satoh et al. (USPN 5,821,016) (Abstract and Col.6, lines 53 – 65), all of which are cited for the purpose of showing that the various acrylate and methacrylate compounds taught by Obayashi et al. have a "photopolymerizable functional group", as required by Claim 5).
- Claims 2 and 6: The amino resin having a carboxyl group and/or a phenolic hydroxyl group is an amino resin obtained by condensing (4,6-diamino-1,3,5-triazin-2-yl) benzoic acid with at least one aldehyde compound selected from the group consisting of formaldehyde, glyoxylic acid, succinsemialdehyde, and hydroxybenzaldehyde (Col.3, lines 16 – 67, and Col.4, lines 1 – 49 of Obayashi et al.).

- Claim 4: The pixels are thermosetted (Col.7, lines 36 – 39 of Marumoto et al., and Col.14, lines 5 – 7 of Obayashi et al.).

10. Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marumoto et al. (USPN 6,277,529 B1) in view of Obayashi et al. (USPN 6,048,924), and in further view of Larson et al. (USPN 5,055,113).
11. The combination of Marumoto et al. and Obayashi et al. teaches all the limitations of Claims 3 and 7 as set forth above in paragraphs 8 and 9, except for a method wherein the amino resin having a carboxyl group and/or a phenolic hydroxyl group is an amino resin obtained by condensing at least one triazine compound selected from the group consisting of melamine, benzoguanamine, and (4,6-diamino-1,3,5-triazin-2-yl) benzoic acid, with at least one aldehyde compound selected from the group consisting of glyoxylic acid, succinsemialdehyde, and hydroxybenzaldehyde. Specifically, Obayashi et al. teaches that the amino resin is obtained by condensing at least one triazine compound selected from the group consisting of melamine, benzoguanamine, and (4,6-diamino-1,3,5-triazin-2-yl) benzoic acid, with at least one aldehyde compound in general (Col.3, lines 16 – 67, and Col.4, lines 1 – 49). As taught by Obayashi et al., the aldehyde compound used in producing the amino resin may be a well-known and conventional aldehyde compound used in producing amino resins (Col.3, lines 61 – 64). Specific examples of the aldehyde compound taught by Obayashi et al. include formaldehyde, acetaldehyde, and glyoxal (Col.3, lines 64 – 66). Larson et al. teaches that, in the art of producing a thermosetting



amino resin by reacting amino compounds with aldehydes (i.e., a process analogous to those of the applicant and Obayashi et al.), commonly used aldehydes include formaldehyde, acetaldehyde, glyoxal, and glyoxylic acid (Col.4, lines 3 – 12). In other words, Larson et al. teaches the functional equivalence of formaldehyde, acetaldehyde, and glyoxal (as taught by Obayashi et al.) and glyoxylic acid (as claimed by the applicant) as aldehyde compounds used in the formation of an amino resin. Therefore, it would have been obvious to one of ordinary skill in the art to use glyoxylic acid as the aldehyde in the amino resin formation process of Obayashi et al. instead of formaldehyde, acetaldehyde, or glyoxal, with the reasonable expectation of success and obtaining similar results (i.e., forming the desired amino resin by reacting an amino compound(s) with an aldehyde, regardless of the specific aldehyde compound utilized).

12. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marumoto et al. (USPN 6,277,529 B1) in view of Obayashi et al. (USPN 6,048,924), in further view of either Hirayama et al. (USPN 5,821,277) or Satoh et al. (USPN 5,821,016), and in view of Kashiwazaki et al. (USPN 5,552,192).

13. The combination of Marumoto et al. and Obayashi et al. teaches all the limitations of Claim 8 as set forth above in paragraphs 8 and 9, except for a method wherein the pixels are thermosetted after photopolymerization. Specifically, the ink-jet printed pixels of Marumoto et al. can be thermosetted and/or photopolymerized by the application of heat, light, or both (Col.7, lines 26 – 67), but there is no explicit

teaching in Obayashi et al. that the water-borne resin is photopolymerized, only that it is thermally cured (Col.14, lines 5 – 7). However, Obayashi et al. does teach that, in addition to the carboxyl group-containing amino resin, the water-borne resin composition contains polymerizable / crosslinkable compounds such as 2-hydroxyethyl (meth)acrylate (2-HEMA) and/or various other acrylate and methacrylate compounds (Col.8, lines 23 – 32, and Col.9, lines 7 – 25). Both Hirayama et al. and Satoh et al. teach that the various acrylate and methacrylate compounds taught by Obayashi et al. have a photopolymerizable functional group (Hirayama et al. (Col.13, lines 31 – 36 and 61 – 65), and Satoh et al. (Abstract and Col.6, lines 53 – 65)), and that a resin containing such photopolymerizable functional groups can be photopolymerized after the addition of a photoinitiator to the resin (Col.14, lines 41 – 63 of Hirayama et al., and Col.7, lines 29 – 51 of Satoh et al.). Kashiwazaki et al. teaches that, in the art of manufacturing a color filter by ink-jet printing (i.e., a process analogous to that of Marumoto et al.), it is desirable to first partially cure the colored pixels by light/UV irradiation (i.e., to photopolymerize the pixels) and then to finish curing the colored pixels by a heat treatment (i.e., to thermoset the pixels) after the deposition of a protective layer on the pixels so that the protective layer does not peel away from the colored pixels or crack (Abstract, Col.2, lines 10 – 40, Col.3, lines 7 – 64, and Example 1). Therefore, it would have been obvious to one of ordinary skill in the art to include a photoinitiator in the resin of Obayashi et al., as taught by either Hirayama et al. or Satoh et al., so that the resin could be cured by the application of heat, light, or both, as desired by

Marumoto et al., and to first photopolymerize (i.e., to partially cure) and then thermoset (i.e., to fully cure) the ink-jet printed pixels of the combination of Marumoto et al. and Obayashi et al. after the application of the protective layer "20" of Marumoto et al. (Col.6, lines 32 – 35, and Col.8, lines 1 – 2) with the reasonable expectation of successfully and advantageously improving the quality of the color filter produced by the process due to the benefits provided by the two-step pixel curing process (i.e., providing a protective layer that does not peel away from the pixels or crack, a problem that can occur in a single-step pixel curing process – see Col.3, lines 7 – 14 of Kashiwazaki et al.).

14. Claims 1 – 8 are rejected under 35 U.S.C. 103(a) as being obvious over the combination of Koike et al. (USPN 6,524,757 B2) and Sobue et al. (USPN 6,143,450).
15. The applied reference (i.e., Koike et al.) has a common inventor and assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under

37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).

16. Regarding Claims 1 – 8, Koike et al. teaches a method of producing a color filter that comprises forming pixels on a transparent substrate using a colored composition containing (a) an amino resin having a carboxyl group and/or a phenolic hydroxyl group, and (b) a coloring material, followed by curing the pixels (Claim 1) (Abstract and Claim 5 of Koike et al.), wherein the amino resin is formed by condensing the specific triazine compound(s) with the specific aldehyde compound(s) claimed by the applicant (Claims 2, 3, 6, and 7) (Col.4, lines 34 – 64, and Claims 6 and 7 of Koike et al.), wherein the pixels are thermosetted (Claim 4) (Abstract, Col.10, lines 33 – 37, and Claim 5 of Koike et al.), wherein the colored composition further contains a compound having a photopolymerizable functional group (Claim 5) (Abstract and Claim 5 of Koike et al.), and wherein the pixels are thermosetted after photopolymerization (Claim 8) (Abstract and Claim 5 of Koike et al.). Koike et al. does not teach that the pixels are formed by an ink-jet printing method. Specifically, the pixels of Koike et al. are formed by coating the colored composition on the

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transparent substrate by various methods such as printing, spraying, roll coating, etc. (Col.9, lines 52 – 57), patterning the coating (Col.9, lines 46 – 51), and then repeating the process to form each of the different pixel colors (Col.10, lines 44 – 54). Sobue et al. teaches that an ink-jet printing method of producing the pixels of a color filter, as claimed by the applicant, is superior to a method of coating, patterning, and repeating (as taught by Koike et al.) because the ink-jet printing method does not have to be repeated in order to form the three different color pixels, thereby increasing yield and reducing cost (Col.1, lines 10 – 67). Therefore, it would have been obvious to one of ordinary skill in the art to utilize an ink-jet printing method to form the pixels of Koike et al. with the reasonable expectation of successfully and advantageously increasing the yield and reducing the cost of manufacturing the color filters when compared to the coating / patterning / repeating process taught by Koike et al.

17. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

### ***Double Patenting***

18. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re*

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*Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

19. A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b). Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).
20. Claims 1 – 8 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 5 – 8 of U.S. Patent No. 6,524,757 B2 (i.e., Koike et al.) in view of Sobue et al. (USPN 6,143,450).
21. Claims 5 – 8 of Koike et al. teach all the limitations of Claims 1 – 8 of the instant application (see paragraph 16 above for details), except for a method wherein the pixels are formed by an ink-jet printing method. Specifically, the pixels of Koike et al. are formed by coating a colored composition on a transparent substrate and patterning the coating to form the pixels (Claim 5). Sobue et al. teaches that an ink-jet printing method of producing the pixels of a color filter, as claimed by the applicant in Claims 1 – 8, is superior to a method of coating and patterning (as taught by Claims 5 – 8 of Koike et al.) because the ink-jet printing method does not

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have to be repeated in order to form the required three different color pixels, thereby increasing yield and reducing cost (Col.1, lines 10 – 67). Therefore, it would have been obvious to one of ordinary skill in the art to utilize an ink-jet printing method to form the pixels of Claims 5 – 8 of Koike et al. with the reasonable expectation of successfully and advantageously increasing the yield and reducing the cost of manufacturing the color filters when compared to the coating / patterning process taught by Claims 5 – 8 Koike et al.

### ***Conclusion***


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kiguchi et al. (US 2002/0128351 A1) teaches a method of producing a color filter by ink-jet printing pixels of a colored composition containing a colorant and a binder resin onto the surface of a transparent substrate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley D Markham whose telephone number is (703) 308-7557. The examiner can normally be reached on Monday - Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



WDM

Wesley D Markham  
Examiner  
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SHRIVE P. BECK  
SUPERVISORY PATENT EXAMINER  
TECHNICAL CENTER 1700